BACKGROUND

Introduction

Indiana is located on the eastern edge of the North American great interior plains. The North - South continental divide traverses through northern Indiana draining watersheds into the Great Lakes basin and the Mississippi River and Ohio River systems. Surface water in the northern one-quarter of the state flows north into the Great Lakes and then through the St. Lawrence River to the Atlantic Ocean. The southern three-quarters of the state drains into the Ohio River or Illinois River and flows into the Mississippi River then south to the Gulf of Mexico. There are 35,673 miles of Indiana rivers, streams, ditches and drainageways listed in USEPA Total Waters File. State water types are described in Table 2. Additional state statistics may be found on the State Information Center Internet site (http://www.in.gov/sic/about/general_facts.html).

Table 2 Atlas

Description	Value	Units
Indiana population[1]	5,942,901	
Indiana surface area[2]	36,291	sq. mi.
Total miles of rivers and streams [3]	35,673	miles
Number of publicly-owned lakes/ reservoirs/ ponds[4]	575+	
Publicly-owned lakes/ reservoirs/ ponds [4]	106,205	acres
Great Lakes[4]	154,240	acres
Great Lakes shoreline[6]	59	miles
Fresh water wetlands[5]	813,000	acres

Sources: [1]U.S. Census Bureau [2]State Information Center [3]Horizon Systems Corporation 1994 [4]USEPA 1993 [5]Rolley 1991 [6]National Hydrography Dataset (USEPA Reach File 3 value was 43 miles.)

Water Pollution Control Program

The IDEM Office of Water Quality has set a goal to develop a watershed approach that will integrate water quality management programs by focusing on watersheds. Water quality standards have been adopted for the Great Lakes Basin watersheds and for the non-Great Lakes Basin watersheds within the state. National Pollutant Discharge Elimination System (NPDES) permitting is the primary point source control process used in Indiana. Nonpoint source pollution is addressed through watershed management and planning projects.

Watershed Approach

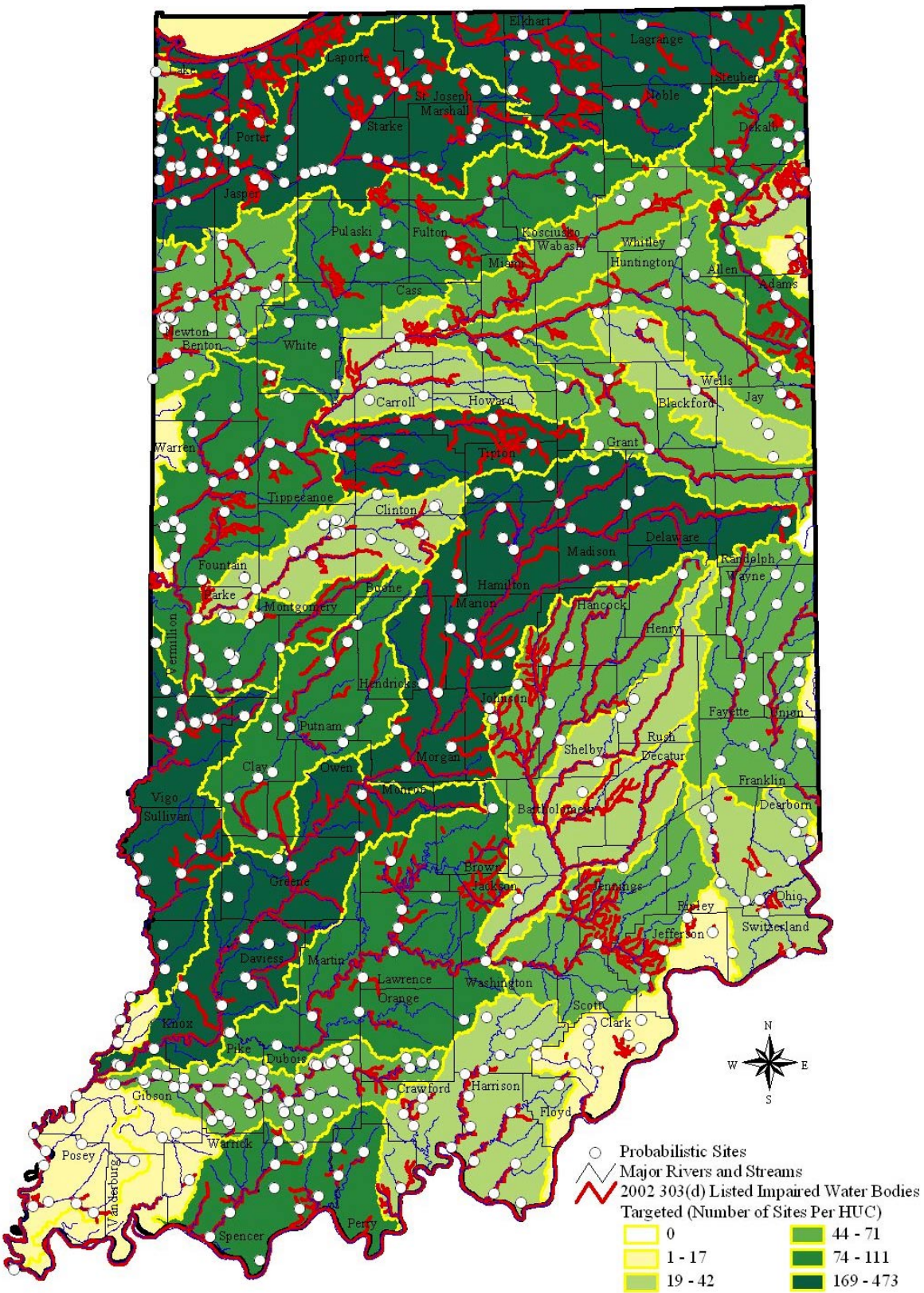
Environmental problems often cut across media and political jurisdictions. Consequently, environmental mitigation and protection require a comprehensive and collaborative approach that works with a multitude of programs and agencies. The watershed approach establishes a framework for coordinating and integrating the multitude of programs and resources. This approach directs the focus on water quality in a geographic area delineated by a watershed. In order for all of the waters of the State of Indiana to support designated uses, an integrated approach which includes a common information base and agreement on roles, priorities, and responsibilities for managing watershed activities must be implemented.

OWQ has set a goal to develop key elements of a framework for integrating the Office of Water Quality's programs into a comprehensive watershed management approach. The OWQ will implement the watershed approach that will address water quality issues and facilitate local community involvement. A team has been established to work on development of watershed strategy. (IDEM/ USEPA 1999)

A statewide rotating basin approach to watershed monitoring was adopted in 1996. The rotating basin plan makes it possible to update water quality assessments on a five-year cycle for monitored watersheds throughout the state. Information that is no more than five years old is then available for use in planning watershed management activities. All water assessment and reporting is cumulative over the past five years, and all basins of the state are being reported this year. Monitoring locations for probabalistic sampling designs and density for targeted sampling designs are illustrated on the map (Figure 1).

This report represents the first comprehensive report on Indiana surface waters since beginning the rotating basin program in 1996. An electronic update has been submitted each year with an abbreviated written report in even numbered years. Annual updates for the basin of interest and other areas which have undergone significant change and for which significant new data have been assessed are reported in the abbreviated written reports.

Figure 1 Monitoring Location Density and Draft 303(d) Waters 2002



Water Quality Standards Program

Indiana's water quality standards underwent significant revision in 1990. At that time, numerical criteria for all pollutants for which USEPA had developed either human health or aquatic life ambient water quality criteria were added to the standards. Procedures for developing additional criteria were also included in these rules. Additionally, all waters were designated for full body contact recreation and the bacteriological indicator organism was changed from fecal coliform to *E. coli* to conform to USEPA's guidance on bacteriological indicators. All waters, with the exception of 34 streams or stream reaches that were designated for limited use, were designated for warm water aquatic life use, full body contact recreational use, public water supply (where there are drinking water intakes from surface waters), industrial uses, and agricultural uses. Certain waters, where natural temperature conditions will support cold water fisheries, were so designated. For those waters where multiple uses exist, the criteria that support the most stringent uses must be met.

The 34 streams or stream reaches designated for limited use were placed in this category through use attainability analysis which confirmed the inability of each stream to fully support aquatic life use due to natural low flow conditions throughout much of the year. Thus, all waters in the state currently are designated for uses consistent with the requirements of the Clean Water Act or USEPA's implementing regulations and have criteria appropriate to support these uses.

In 1993, Indiana's rules and regulations, which guide the implementation of Indiana's water quality standards into Indiana's NPDES permits, were extensively revised. Although this resulted in significant changes to these rules, only minor changes to the water quality standards were made.

With the issuance of the final Great Lakes Water Quality Guidance in 1995, Indiana began the process to revise water quality standards and implement regulations for those waters in Indiana's Great Lakes basin. Many of Indiana's waters are located outside the Great Lakes basin and this rulemaking, for the most part, had no immediate effect on these waters. These revisions incorporated the various criteria and procedures (or equivalent ones) identified in the Guidance into Indiana's water quality standards. As a part of this rulemaking, Indiana also developed procedures to implement the antidegradation policy for all substances discharged to waters in the basin. These revisions were adopted by the Indiana Water Pollution Control Board effective in February 1997 and submitted to USEPA for approval. USEPA responded in August 1999 with a letter highlighting several issues for IDEM to address. IDEM responded within the required ninety days. In August of 2000, EPA formally approved these revisions with the exceptions of the sections on reasonable potential for whole effluent toxicity and variances. EPA promulgated the federal Guidance language for these parts of the rule for Indiana.

Indiana is currently in the process of reviewing/revising the water quality standards applicable to waters in the rest of the state. Indiana is proposing to incorporate some aspects of the Great Lakes Water Quality Guidance into the water quality standards applicable to waters outside the Great Lakes basin with modifications where necessary. The criteria and methodology to calculate criteria represent the most recent scientific thinking on how to incorporate the existing toxicity data into criteria and should replace the existing criteria and calculation procedures that are currently used. Indiana is also proposing to incorporate into NPDES permits at least some of the procedures for implementing the water quality standards that were adopted for the Great Lakes basin. A proposal to adopt an antidegradation implementation procedure for all

substances for waters outside the Great Lakes basin, which is similar to that adopted for waters in the basin, is also under consideration.

Considerable data on the macroinvertebrate and fish communities in many Indiana waters have been collected. Indiana is in the process of analyzing and evaluating the data for the purpose of developing biocriteria. Although Indiana is not at the stage in the evaluation of these data to propose numerical biocriteria, narrative biocriteria language that would allow the state to utilize the available data to assess the biological integrity of aquatic communities may be proposed at this time.

IDEM is proposing to add water quality standards for wetlands during this review period. These standards would include narrative criteria, designated uses and an antidegradation policy and implementation procedure. These proposed standards and implementing procedures were preliminarily adopted by the Water Pollution Control Board in February 2002.

IDEM is considering a narrative sediment quality criterion for all waters in this review period. Any proposed narrative standard would address both historical sediment contamination problems and the prevention of sediment contamination in the future.

Indiana is currently working with USEPA Region 5 and the other Region 5 states to develop nutrient criteria for different water body types throughout the Region as directed by the Clean Water Action Plan. Indiana has submitted a draft plan and schedule for the development of nutrient criteria to EPA for review. The draft plan calls for the development of nutrient criteria by the end of 2005 and for the states to put these criteria into state water quality standards in the next triennial review period. This draft plan is currently under review by EPA. EPA has issued recent guidance that would appear to give states additional flexibility in the development of nutrient criteria, especially if the state and EPA have agreed on a plan to accomplish this goal. Indiana plans to actively participate in this effort.

Preliminary ground water rules were adopted by the Indiana Water Pollution control Board in November 1999. Public water supply definitions have been formalized to be consistent with federal Safe Drinking Water Act definitions. Consumer confidence reports establish minimum requirements for content of annual consumer confidence reports which public water suppliers deliver to their customers.

Point Source Program

Point source pollution in Indiana is controlled primarily through permits issued by IDEM for discharges to surface water under the National Pollutant Discharge Elimination System (NPDES). All facilities which discharge to waters of the State must apply for and receive a NPDES permit. Unpermitted dischargers and permittees out of compliance with their permit conditions are referred for enforcement action.

The limitations established in each NPDES permit are required to achieve technology-based and water quality-based requirements of the Clean Water Act and state law, and to protect all designated and existing uses of the water body. Besides issuing NPDES permits, the program includes these other activities: wastewater treatment plant inspections, operator assistance and training, compliance data tracking, and enforcement.

During 2001, the NPDES permitting program started to systematically identify major issues that complicate the final determinations for many NPDES permits being renewed. Most recently, a number of internal policies, procedures and guidance documents have been developed to enhance the program's ability to issue and reissue NPDES permits in a timely manner. In addition, a number of changes within the regulatory framework are being pursued to complement this effort.

The NPDES permitting program is augmented by OWQ staff that issue industrial wastewater pretreatment permits to industries discharging to municipal wastewater treatment plants, delegated to operate their own pretreatment programs. Urban wet weather discharges are also part of the permitting program. The staff also oversee and audit municipal pretreatment programs in 45 municipalities with industrial dischargers. Storm water runoff associated with land disturbing activities of 5 acres or more and with industrial activities are now regulated by permits. A strategy for managing and maintaining combined sewer collection systems is in the implementation stage. The goal of these additional permitting and management activities is to reduce untreated discharges to surface water.

Toxic pollutants are addressed by permit limits for discharge of specific chemicals and by whole effluent toxicity limits. Other Office of Water Quality branches and sections provide permit compliance, and facility operation technical support for wasteload allocation modeling and monitoring. These program areas work closely with the NPDES permitting program to ensure that permit limits are adequate for protection of designated uses and that dischargers remain in compliance with these limits.

Dischargers in the Great Lakes basins must now comply with Indiana's water quality standards for Great Lakes waters. Permits for dischargers within the Lake Michigan and Lake Erie basins are written to incorporate Indiana's water quality standards implemented as a result of the federal Great Lakes Initiative (GLI).

The point source control program, through field inspection staff, identifies NPDES point source outfalls in Indiana by using the global positioning system (GPS). This will provide better location information for USEPA's Permit Compliance System and ultimately for monitoring, modeling, and designated use evaluation of lakes and streams. The inspectors are acquiring the outfall coordinates using handheld GPS units whenever they visit a site with a location that is not already verified in the Permit Compliance System.

Indiana wastewater treatment inspections increased three fold over the nine-year period, 1989 to 1997. Inspectors review operation and maintenance of wastewater treatment plants permitted under the National Pollutant Discharge Elimination System. They can provide referrals for operator assistance and training, and for enforcement action as needed.

In summary, NPDES permits are the focal point of the point source control program. A major effort is being made to stay in contact with permittees through the inspection program and through the permit renewal process. Regulatory efforts are also focused on urban point sources such as pretreatment and combined sewers, which are now being regulated through the NPDES program. The project to locate all NPDES discharge points should provide valuable information for monitoring, assessment, and compliance programs. The surface water monitoring strategy provides a framework for implementing and measuring the effectiveness of point source controls for Indiana surface waters.

Nonpoint Source Control Program

The Watershed Management Section is located in the Planning Branch of the Office of Water Quality. The Section manages over 130 grant projects and has produced resource documents such as the Watershed Action Guide for Indiana (a workbook for completing watershed management plans) and Watershed Restoration Action Strategies (8-digit scale resource documents for watershed management issues). The Section will also be involved in the nonpoint source component of total maximum daily loads. Program elements include Section 319 Nonpoint Source grants, Section 205(j) Planning grants, Section 104(b)(3) NPDES related grants, and conducting training and technical assistance on watershed management planning and implementation. Figure 2 displays the locations of Section 319 projects throughout the state.

In partnership with other agencies, the Section leads the development of the Unified Watershed Assessment, a requirement of the Clean Water Action Plan of 1998. Through evaluation of water quality data, natural resource concerns, and human activities that may have the potential to impact water quality, the watersheds in the state are prioritized for restoration work. The 2000 update of the Unified Watershed Assessment characterizes the 361 11-digit hydrologic units in the state for 15 different parameters. Copies of the Unified Watershed Assessment are available from the Watershed Management Section. The next update will align the Unified Watershed Assessment more closely with the state's Integrated List of Waters.

The Nonpoint Source Management Plan for Indiana was updated and approved by USEPA Region 5 in October 1999, enabling Indiana to receive a full allocation of Section 319 funding. Copies of the plan are available on compact disc from the Watershed Management Section.

The Clean Lakes Program is funded through a Section 319 grant and managed by IDEM's Lakes Coordinator in the Assessment Branch.

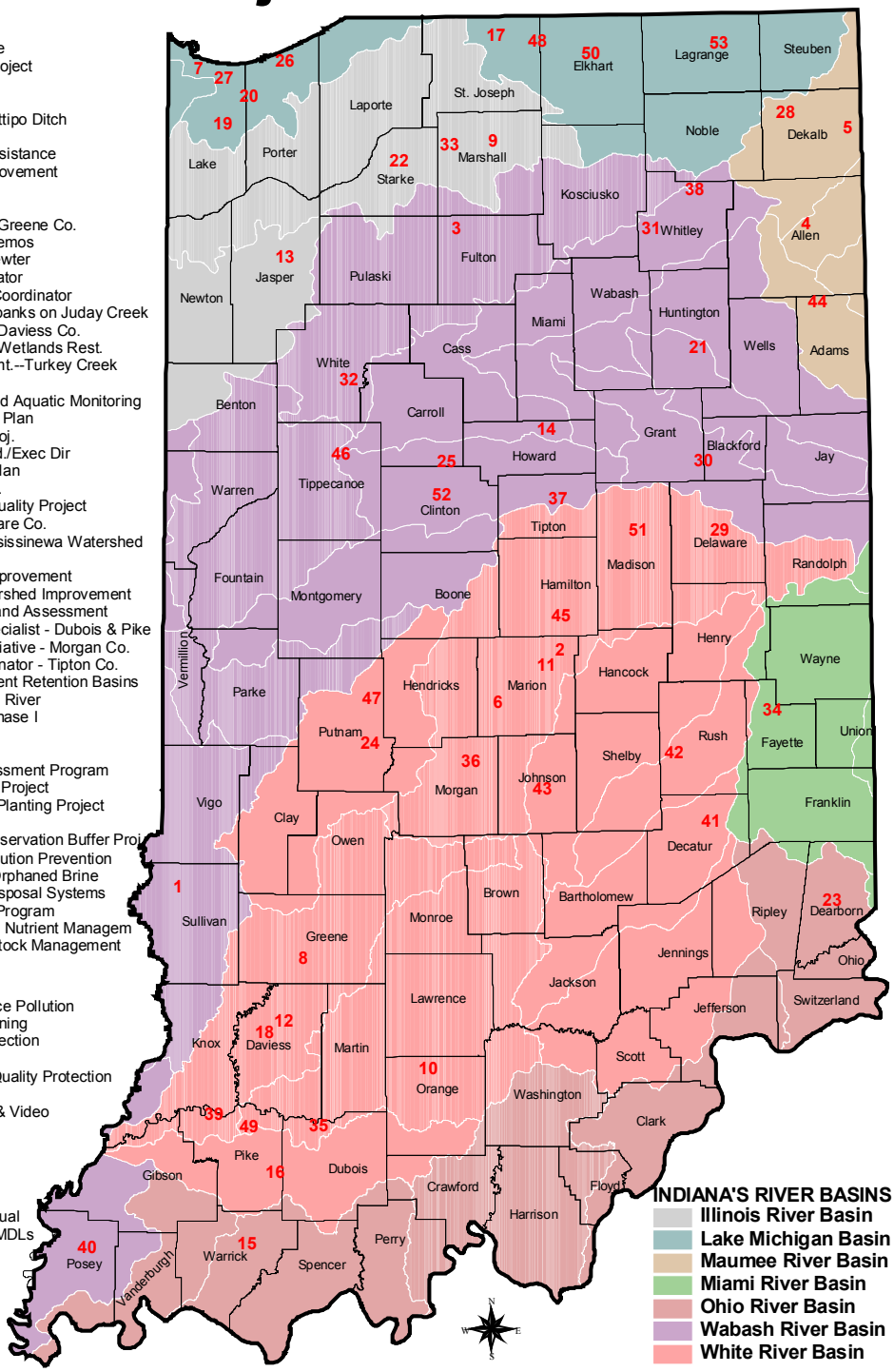
Current nonpoint source program activities and grant opportunities including downloadable documents and applications may be found on the Watershed Management Section internet page at http://www.IN.gov/idem/water/planbr/wsm/index.html .

Figure 2 Nonpoint Section 319 Projects

Nonpoint Source Program Section 319 Projects FFY 2000-2001

1 Wabash River Expedition
2 Indian Creek Watershed Alliance
3 Tippecanoe River Watershed Project
4 Public Outreach Project
5 Septic Cost-Share
6 Bank Stabilization Project on Trittipo Ditch
7 Wolf Lake Conservation Area
8 Lower White River Technical Assistance
9 Yellow River Water Quality Improvement
10 Nutrient Management Specialist
11 Fall Creek E. coli TMDL
12 Livestock Waste Management--Greene Co.
13 Multi-County Septic Solutions Demos
14 Fluorometric Detection of Wastewter
15 Watershed Restoration Coordinator
16 South Fork Patoka Watershed Coordinator
17 Reduction of Erosion of Streambanks on Juday Creek
18 Livestock Waste Management--Daviess Co.
19 Gatlin Prop. Pollution Control & Wetlands Rest.
20 Comprehensive Watershed Mgmt.--Turkey Creek
21 NPS Pollution Assessment
22 Kankakee Sands Restoration and Aquatic Monitoring
23 Tanner's Creek Watershed Mgt. Plan
24 Upper Eel River Manure Mgt. Proj.
25 Wildcat Creek Watershed Coord./Exec Dir
26 Coffee Creek Watershed Mgt. Plan
27 Aquaculture Demonstration Proj.
28 Vegetative Restoration Water Quality Project
29 White River Watershed - Delaware Co.
30 Land Use & Sediment Load Mississinewa Watershed
31 Soil Bioengineering Project
32 Lake Freeman Water Quality Improvement
33 Lake Gilbraith & Flat Lake Watershed Improvement
34 Lick and Garrison Creek WMP and Assessment
35 Animal Waste Management Specialist - Dubois & Pike
36 White River Watershed Mgt. Initiative - Morgan Co.
37 Watershed Management Coordinator - Tipton Co.
38 Crooked Lake Sediment & Nutrient Retention Basins
39 Land Treatment on Lower White River
40 Pitcher Lake Watershed Proj. Phase I
41 Sand Creek Watershed Project
42 Conns Creek Subwatershed
43 Youngs Creek Watershed Assessment Program
44 St. Marys Nutrient Management Project
45 Riparian Area Buffer Strip Tree Planting Project
46 Water Quality Education Project
47 Big Walnut and Deer Creek Conservation Buffer Proj
48 Landuse Changes and NPS Pollution Prevention
49 Prioritizing the Remediation of Orphaned Brine
50 Problematic Domestic Waste Disposal Systems
51 Public Information & Education Program
52 Waste Utilization with Integrated Nutrient Managem
53 WQ Improvement through Livestock Management

STATEWIDE PROJECTS:
A Million Trees for a New Millenium
A Study of Indicators of Nonpoint Source Pollution
Comprehensive Nutrient Mgt. Plan Training
Engaging the Public in Watershed Protection
Erosion & Sediment Control Principles
Farm & Home Assessment for Water Quality Protection
Farm Show 2001
IN Storm Drain Marking How to Guide & Video
Indiana Lakes Program
NPS Info & Ed 2002 SWCS Meeting
NRCS Liaison
Planning with Power
Regional Watershed Conservationists
Stormwater Principles & Practices Manual
Using Watershed Planning Tools for TMDLs
Watershed Training Scholarships
Wetlands Outreach Coordinator



W. Stone, 12/19/01

Coordination with Other Agencies

The Indiana Department of Environmental Management has working relationships with other state and federal agencies interested in the improvement of Indiana water quality. In addition, results of projects completed by local and regional government, university and nonprofit organizations are integrated into reporting processes whenever possible.

The USDA Natural Resources Conservation Service (NRCS) maintains a water quality liaison position at IDEM, and the two agencies cooperatively support three watershed conservationist positions for NRCS personnel working in the nonpoint source program at IDEM.

Activities in wetlands or other waters of the U.S., which may affect water quality, are regulated under Clean Water Act Section 404. Activities require approval by IDEM through Clean Water Act Section 401 water quality certification programs. IDEM works cooperatively with several U.S. Army Corps of Engineers districts, the Indiana Department of Natural Resources (IDNR), the U.S. Fish and Wildlife Service and other agencies in administering the Clean Water Act Section 401 Water Quality Certification Program.

IDEM is working with IDNR to develop and implement a stream volunteer monitoring program. The program goal is to electronically store results for use by IDEM technical staff to supplement or enhance department water quality assessments. IDNR volunteer monitoring outreach staff are taking the lead in developing this program through the Hoosier Riverwatch program.

This year the Office of Water Quality requested water quality data and results from state and local agencies, industry, municipalities, and nonprofit organizations in order to broaden the scope of information available for assessment of Indiana surface waters. The data and reports received are being reviewed for use in updating water quality assessments and identifying water bodies for targeted monitoring and assessment.

Cost/ Benefit Assessment

Cost Information

The Wastewater and the Drinking Water State Revolving Fund (SRF) Loan Programs are low-interest loan programs. The Wastewater program was created to financially assist Indiana communities in their efforts to make improvements to wastewater treatment facilities and abate pollution. The goal of the Drinking Water State Revolving Fund is to ensure safe drinking water to Indiana's water consumers by giving maximum priority to proposed projects that provide greater protection to public health or ensure Safe Drinking Water Act compliance.

Cities, towns, counties, regional sewer/water districts, conservancy districts, and water authorities are eligible for both programs. On July 1, 1999 private and not-for-profit public water systems became eligible for drinking water money also. Typical loans include wastewater treatment facility construction, construction of sewer lines, projects that address combined sewer overflows, drinking water distribution lines, and water tanks. The SRF Program assists communities based on need and determines the loan interest rates by the median household income.

Since Indiana's SRF Program made its first loan in 1991, 230 communities have closed on loans with the Program, totaling $1.01 billion. The Program hit its $1 billion milestone in October 2001, when it closed a Wastewater loan with the City of Rockport for $200,000. Indiana has shown dramatic progress in providing financial assistance to communities for both Wastewater and Drinking water infrastructure improvements. Table 3 below shows the loans closed since 1999.

Table 3 State Revolving Fund Loans

Year	Drinking Water Loans		Wastewater Loans	
	Number	Amount	Number	Amount
1999	3	$8,600,000	28	$161,469,000
2000	26	$89,222,000	55	$265,559,020
2001	15	$28,949,500	34	$162,935,000

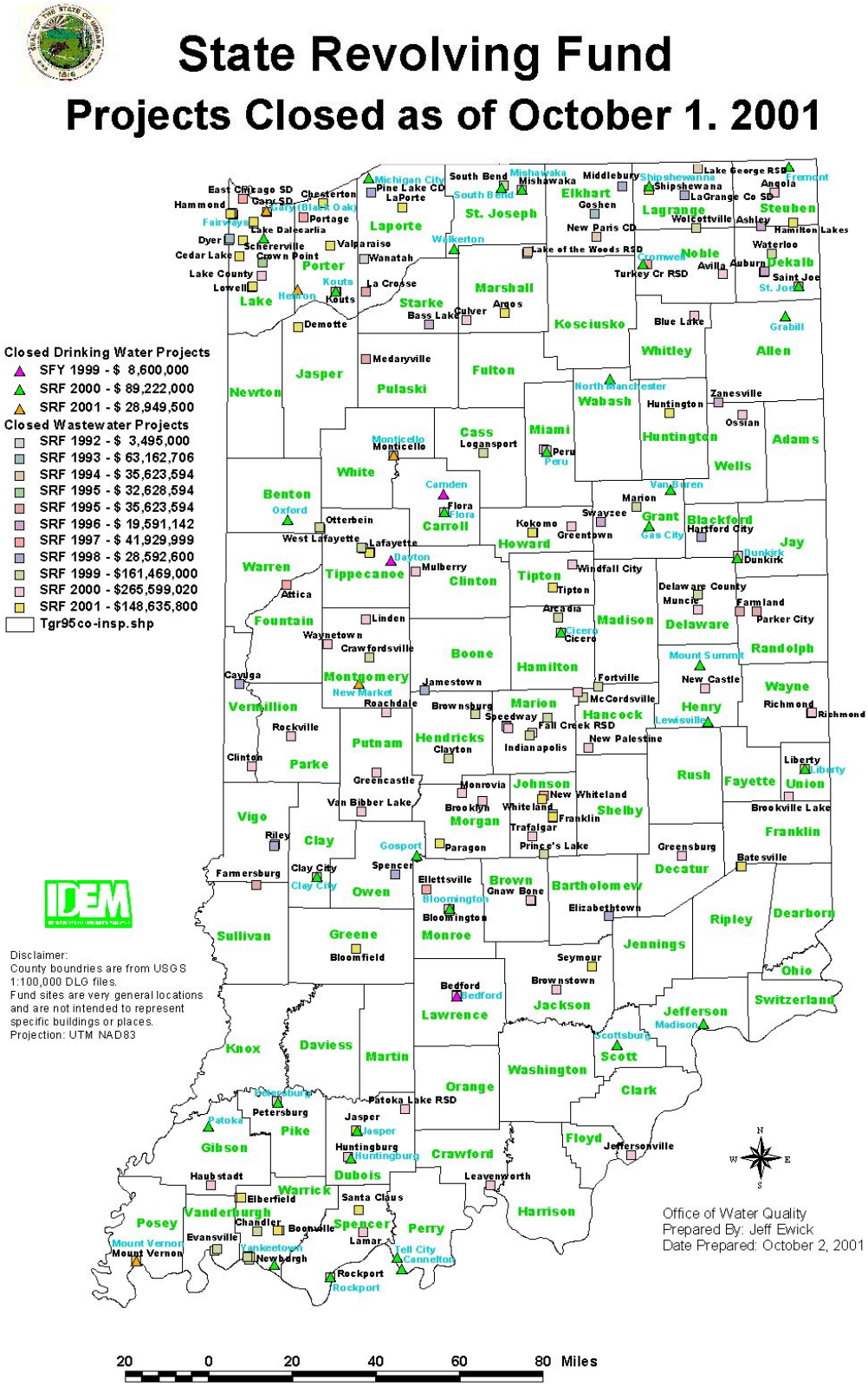
Source: IDEM State Revolving Fund Section

Water quality in Indiana rivers and streams is expected to improve as a result of the assistance of the State Revolving Fund to communities (Figure 3).

Benefits Information

Indiana water quality improvements result in enhanced recreational opportunities, more aquatic diversity, healthier sport fish populations, safe drinking water, increased use of beaches, and healthier aquatic ecosystems. Benefits of water pollution abatement and control have not been quantified in dollars in the past. With better accounting systems and direction through the Performance Partnership Agreement with USEPA, the Office of Water Quality hopes that resources to quantify the enormous benefits of water pollution abatement will be available in the future.

Figure 3 State Revolving Fund Loans as of October 1, 2001



Special State Concerns and Recommendations

Indiana has completed a comprehensive assessment of all streams for aquatic life use support as part of a five-year rotating basin monitoring program. The assessments were completed on fish community samples acquired from locations throughout the state generated using a probabilistic sampling design. The results provide statistical inferences on the extent of aquatic life designated use support and non support for all streams in the state. The results do not indicate where each specific impaired stream is located. It would be very helpful for USEPA to support programs to evaluate methods for identifying specific stressors and sources of pollutants causing the biological impairment documented in the probabilistic assessements. New technology and geographic information system techniques to correlate possible anthropogenic activities with impaired sites should be explored.